Make:Projects
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# Drive a 7-Segment LED with an Arduino

Written By: Riley Porter

## TOOLS:

- Arduino microcontroller (1)

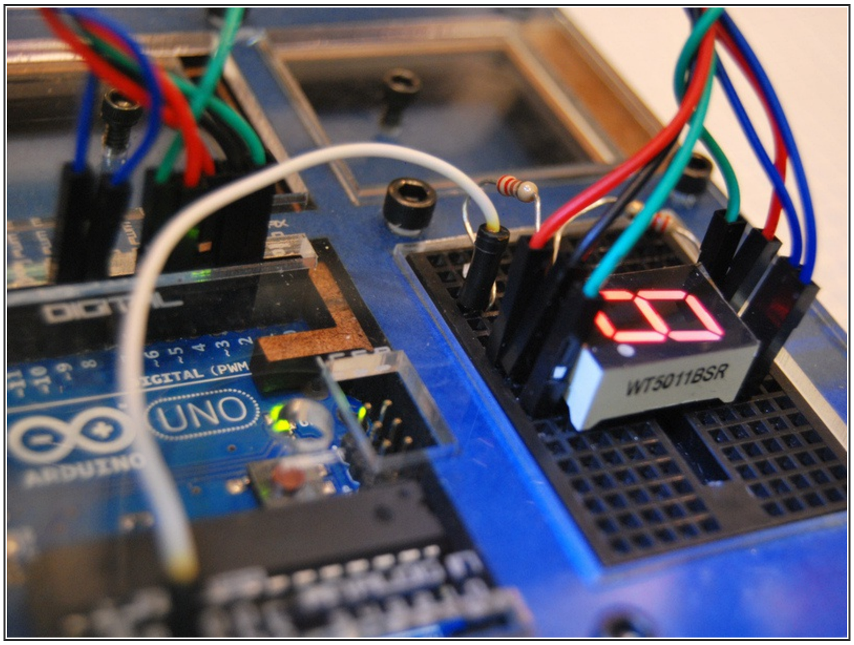
## PARTS:

- misc resistors (2)
  *Close to 220 Ohms is good enough.*
- Mini breadboard (1)
- Connecting (jumper) wires (11)

## SUMMARY

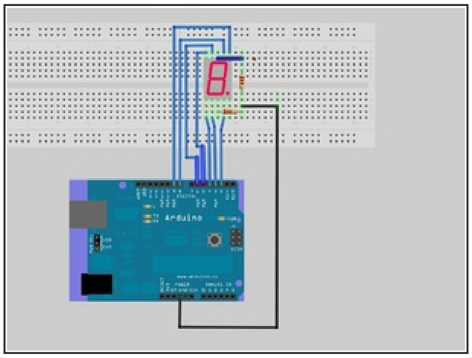
Using the Arduino development platform you will learn how to display numbers and letters on a single 7-segment LED display. There are many ways to drive 7-segment displays, and this is a fairly simple method. However, using this method to drive even one LED 7-segment array "burns" (occupies) many of the digital I/O pins on your Arduino. In later projects, I'll show you how to use a dedicated 7-segment LED driver.

## Step 1 — Drive a 7-Segment LED with an Arduino



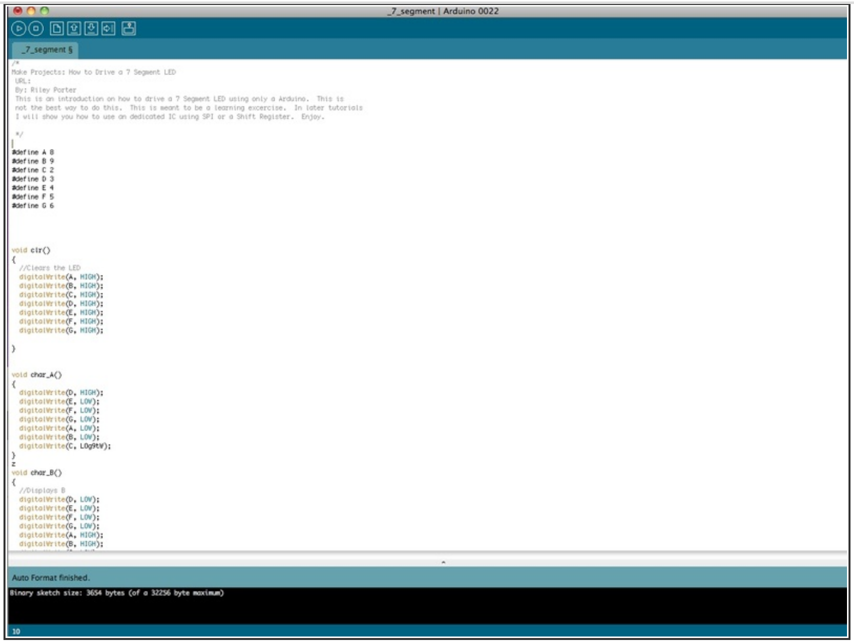
- Gather up your gear:
  - Two 220-ohm resistors (close to that value is good enough)
  - 11 male-to-male jumper wires
  - 1 Breadboard
  - 1 Arduino Development Board

## Step 2



- Wire up your segment. Use the Fritzing image as your guide.
  - A = 8, B = 9, C=2, D=3, E=4, F=5, G=6
  - The two middle pins (Pin 3 and Pin 8) on top and bottom go to Ground (or to the first leg of the 220 ohm resistor). These are our current-limiting resistors.

## Step 3



```
/*
Make Projects: How to Drive a 7 Segment LED
 URL:
 By: Riley Porter
 This is an introduction on how to drive a 7 Segment LED using only a Arduino.  This is
 not the best way to do this.  This is meant to be a learning excercise.  In later tutorials
 I will show you how to use an dedicated IC using SPI or a Shift Register.  Enjoy.

 */

#define A 8
#define B 9
#define C 2
#define D 3
#define E 4
#define F 5
#define G 6



void clr()
{
  //Clears the LED
  digitalWrite(A, HIGH);
  digitalWrite(B, HIGH);
  digitalWrite(C, HIGH);
  digitalWrite(D, HIGH);
  digitalWrite(E, HIGH);
  digitalWrite(F, HIGH);
  digitalWrite(G, HIGH);

}


void char_A()
{
  digitalWrite(D, HIGH);
  digitalWrite(E, LOW);
  digitalWrite(F, LOW);
  digitalWrite(G, LOW);
  digitalWrite(A, LOW);
  digitalWrite(B, LOW);
  digitalWrite(C, LOg9tW);
}
z
void char_B()
{
  //Displays B
  digitalWrite(D, LOW);
  digitalWrite(E, LOW);
  digitalWrite(F, LOW);
  digitalWrite(G, LOW);
  digitalWrite(A, HIGH);
  digitalWrite(B, HIGH);
```

Auto Format finished.

```
Binary sketch size: 3654 bytes (of a 32256 byte maximum)
```

- Load the code and you're good to go:
  - Get the code from here: http://bit.ly/ia3lv7
- If you copy and paste the code into your Arduino sketch, you will see that if everything is hooked up correctly, it will loop from A-F then 1 - 0. This is not the most interesting project. However it does lay the groundwork for displaying data on a 7-segment LED for your Arduino projects.
- The approach we used to drive this one 7-segment LED took 8 of our digital I/O lines. This is quite a few lines to "burn" for this functionality. However in upcoming tutorials, I will post some more elegant ways to drive 7-segment displays than using 8 digital I/O lines.
- In the code there are 15 functions that will display the letter or number represented by the function name on the LED display. For example, if you were to run `seven()`, this would display the number 7 on the display. If you write a Pin LOW, you are in fact turning on that LED. If you write a pin HIGH it is now turned off.
- That's it! All you have to do now is to program it to display something useful for your project.

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